

AMENDMENTS TO THE SPECIFICATION:

Please replace the paragraph beginning on page 1, line 1 after the title, and ending on page 1, line 3, with the following amended paragraph:

The present specification ~~is based upon~~ application claims priority pursuant to 35 U.S.C. §119 from Finnish Patent Application No. 20001733, the entire contents of which ~~are~~ is incorporated by reference herein.

Please replace paragraph [0006] on page 2, with the following amended paragraph:

[0006] To eliminate said drawbacks, a refractometer of a novel type has been provided, being disclosed in ~~the Finnish patent application 980221~~ U.S. Patent No. 6,067,151. The advantage of this solution is that the optical window can be attached also by using a weakly elastic seal, such as Teflon, without the accuracy of the angle measurement suffering from this at all.

Please replace paragraph [0007], beginning on page 2, with the following amended paragraph:

[0007] The refractometer described in ~~the Finnish patent application 980221~~ U.S. Patent No. 6,067,151 functions extremely well in certain environments, but a problem is caused by measurement of aggressive fluids, for instance. Aggressive fluids include strong acids and bases, such as hydrochloric acid (HCl), hydrofluoric acid (HF), nitric acid (HNO₃) and sulfuric acid (H₂SO₄), as well as sodium (NaOH) and potassium (KOH)

hydroxides and ammonia (NH₄OH). A plurality of acids and bases strongly corrode most of the structural metals, and alternative metals are expensive and difficult to be machined (such as tantalum and zirconium). Further, problems are caused in measurement of less aggressive fluids in cases where impurities and metal ions are not desirable in the process fluid. In such cases, the process surfaces of tube systems and instruments must not contain any metal part.

Please replace paragraph [0017] on page 5, with the following amended paragraph:

[0017] In order to eliminate the above drawbacks, a solution has been provided in which a source of light 1, an optical window 2, means for directing the illuminating beam, and the light detector are arranged in a rigid optical module 4, which is shown in Figure 2. The optical module 4 is floatingly arranged to be supported by sealing 5 arranged between the housing structure and the optical window. The sealing can be cone sealing, for example, or it can form a spherical surface, etc. Since the optical module 4 floats supported by the sealing 5 relative to the housing structure or other mechanics of the device, external forces, such as forces generated by the flow of the process fluid, mechanical stress in the tube system, heat expansion and pressure, do not affect the accuracy of the measurement. Owing to the floating optical module 4, also materials with weak elasticity, such as a polytetrafluoroethylene material, e.g., Teflon, can be used in the sealing of the optical window, for instance a prism.

Please replace paragraph [0018] beginning on page 5, with the following amended paragraph:

[0018] The optical module 4 is pressed against the sealing by means of appropriate spring members, whereby the compressive force is constant in all temperatures. Thus, the spring members together with the floating optical module compensate for the weak elasticity of certain sealing materials. The spring members are mounted in such a way that no process heat is conducted into the optical module through them. The spring members are not shown in Figure 2, but ~~Finnish patent application 980221 U.S. Patent No.~~ 6,067,151 which is incorporated as by reference herein, the structure being described in more detail in said application.

Please replace paragraph [0020] on page 6, with the following amended paragraph:

[0020] As mentioned above, the optical module 4 includes all optical elements. The optical module also includes a temperature sensor 8, because accurate concentration measurement also requires quick and accurate temperature measurement of the process fluid. The temperature sensor 8 is positioned in the vicinity of the tip of the housing in such a way that the heat contact in the direction of the tip and further to the process fluid is maximized. As regards the positioning of the temperature sensor 8, ~~Finnish patent application 980221 is incorporated as reference herein; U.S. Patent No. 6,067,151 describes this aspect being described~~ in more detail in said application patent. The process fluid 3 is conducted to the optical window by means of a flow vessel 7.

Please replace paragraph [0021] beginning on page 6, with the following amended paragraph:

[0021] A thin (e.g. 0.25 mm) polytetrafluoroethylene or Teflon film is placed between the cone surface of the optical window 2 at the tip of the optical module and the tip 6 of the housing structure functions as sealing 5, as observed earlier. Due to the weak elasticity of ~~Teflon~~ polytetrafluoroethylene (Teflon), the sealing force is produced by means of spring members, as mentioned above. The spring members press the optical module against the cone surface, whereby the conical sealing surface is subjected to the whole sealing force generated by the spring members, for instance approximately 500 Newtons. Said aspect imposes high mechanical requirements on the material of the tip 6 of the housing structure.

Please replace paragraph [0024] beginning on page 7, with the following amended paragraph:

[0024] The tip part 6 of the housing structure in the example of Figure 1 is made of a sapphire disk having a conical sealing surface. The sapphire disk is further attached to other parts of the housing structure, which parts can also be metallic, since they are not in contact with the process fluid 3. It is to be noted that in practice, it is advantageous for different parts of the housing structure to be at least partly made of non-metallic material, for instance Teflon, also outside the process surface, since the process seal can leak. On the process side, the following materials can preferably be used. The tip part of the housing

structure can be made of sapphire, and a spinel prism can be used as the prism. A Teflon polytetrafluoroethylene (Teflon) film can be used as a prism seal and a pre-fluoroelastomer as O-ring seals. The flow vessel can be made of a fluoro plastic material, for example.